

NOTE

EVIDENCE FOR SEVERAL SIBLING BIOLOGICAL SPECIES CENTRED ON *MYRMECIA PILOSULA* (F. SMITH) (HYMENOPTERA: FORMICIDAE)M. W. J. CROSLAND, R. H. CROZIER and H. T. IMAI¹*School of Zoology, University of New South Wales, Kensington, N.S.W. 2033.*¹ *National Institute of Genetics, Mishima, Shizuoka-ken 411, Japan.*

Abstract

Chromosome numbers of $2n = 2, 9, 10, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 30, 31$ and 32 were found for *Myrmecia pilosula* (F. Smith). Karyotypic and morphological evidence indicates the presence of a "*M. pilosula*" complex with at least 3 biological species.

The common black Australian jumper ant *Myrmecia pilosula* (F. Smith) has been taxonomically discussed as a single biological species (Clark 1951; Brown 1953). However, recent studies have shown that these ants, found in all states of Australia (except Queensland and the Northern Territory), are not actually a single species but instead contain a range of chromosome numbers suggesting the presence of sibling species (Imai *et al.* 1977; Crosland and Crozier 1986).

Here we report new chromosome numbers for "*M. pilosula*" of 18-27 with all intermediate chromosome numbers being present (Table 1). Chromosome preparations were made from pupal and prepupal cerebral ganglia using the technique described by Imai *et al.* (1977). Voucher specimens from all colonies karyotyped have been deposited in the Australian National Insect Collection, Canberra.

The "*M. pilosula*" complex contains at least 3 species.

The $2n = 2$ species is karyotypically distinct from the other species and C-banding evidence (Imai unpubl. data) indicates no direct chromosomal homology with the $2n = 10$ karyotype. Specimens from the only known $2n = 2$ colony are morphologically distinguished from other "*M. pilosula*" species karyotyped by their especially strong dorsal sculpturing particularly on the node.

The $n = 5$ species is also distinct from the other species. It was found in lowlands (altitude 120 m), whereas all other "*M. pilosula*" species karyotyped were from higher elevations (620-1200 m). The $2n = 9$ and 10 karyotypes reported by Imai *et al.* (1977) were from another lowland population of "*M. pilosula*" (altitude 80 m). Both populations of this species are morphologically distinguished from all other karyotyped "*M. pilosula*" (except the Black Mountain population) by the presence of pilosity on the head giving a slight greenish tinge.

Table 1. Chromosome numbers of *Myrmecia pilosula* from different populations (♂ indicates male and ♀ indicates worker)

Population	Altitude (metres)	Chromosome number (n), 2n	Number of colonies observed	Number of individuals observed	Total cell number observed
Tidbinbilla 35°26'E 148°56'S	820	(1), 2	1	55♂, 34♀	>1000
HMAS Albatross 34°56'E 150°32'S	120	(5)	1	4♂	28
Nerriga 35°05'E 150°10'S	730	21, 22, 23	3	14♀	59
Tidbinbilla 35°26'E 148°56'S	820	22, 23, 24	5	14♀	56
Black Mtn 35°17'E 149°06'S	620	18, 19	2	14♀	68
Wentworth Falls 33°33'E 150°22'S	870	(9, 10), 18, 19, 21	4	5♂, 14♀	41, 93
Lawson 33°43'E 150°26'S	670	(10, 11), 20, 21, 22, 24	6	12♂, 14♀	68, 63
Mt Victoria 33°36'E 150°16'S	980	(10, 11, 13, 15) 24, 25, 26, 27	4	5♂, 11♀	35, 71
Piccadilly Circus 35°22'E 148°49'S	1200	(16), 30, 31, 32	6	1♂, 16♀	3, 50

C-banding evidence (Imai unpubl. data) indicates that "*M. pilosula*" with chromosome numbers of 18-32 might all belong to the same species. Morphologically, however, all colonies of Tidbinbilla and Nerriga "*M. pilosula*" (with $2n = 21-24$) were noticeably smaller than karyotyped "*M. pilosula*" from other populations.

Variation in chromosome number commonly occurs within single "*M. pilosula*" nests. Four different karyotypes ($2n = 20, 21, 22, 24$) were found out of 6 ants examined from a single nest at Lawson. The presence of multiple functional queens within single nests would contribute to the increased karyotypic variability of individual nests.

Acknowledgments

We thank R. W. Taylor for confirming that all our ants could be appropriately placed in the nominal taxon "*Myrmecia pilosula*". This work was supported by a Royal Society Rutherford Scholarship to MWJC and grants from the Australian Research Grants Scheme to RHC.

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[Manuscript received 3 March 1987. Revised 12 May 1987.]